KES

Inspection Standard for Dry Process Cylinder Liner (For Processing)

KES R – I002C

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Additional Rule

KIA MOTORS

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1. Purpose

This standard is to regulate inspection method to achieve quality guarantee for manufacturing process concerning national standard regulation for cylinder liner.

2. Scope of Application

It determines quality guarantee method for dry cylinder liner process.

3. Material

It shall be FCH 5A (1RON HIP) determined by KES B-H006 [Cast iron casting (Cylinder liner)].

4. Name of each part

They are shown on figure 1.

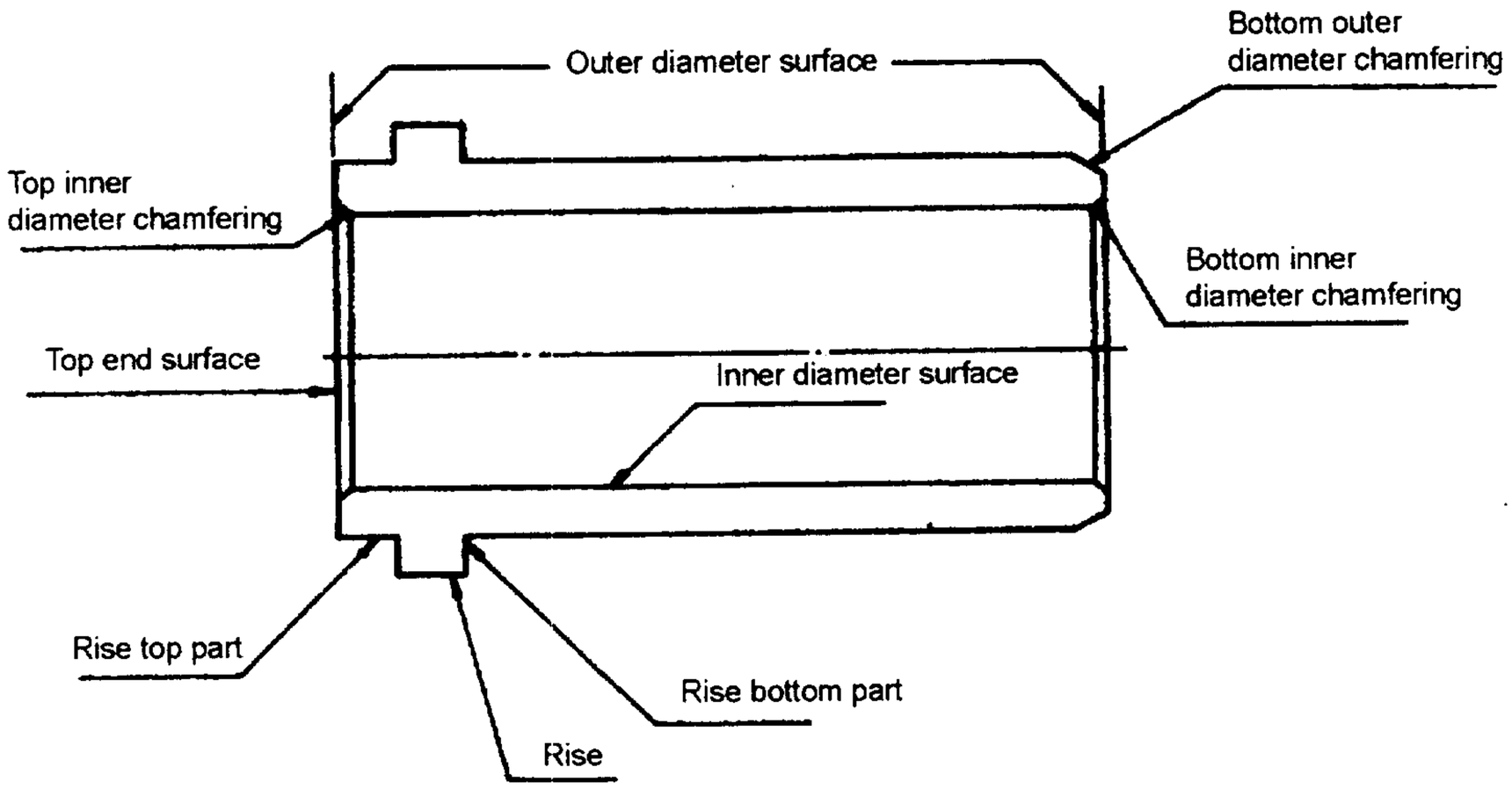

Fig. 1

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5. Inspection Items/inspection Method for each Process

It shall be as table 1.

Process name	Applying model	Inspection items	Inspection method			Remarks
			Responsible manufacturing department	Responsible inspection department		
				Day inspection	Regular inspection	
Outer diameter rough-cut	All model	Rise outer diameter	KS A3160 (Coefficient continuous manufacturing type sampling inspection) AOQL : 1 % $\bar{P}$: 2.5 %	1time / 4hours (Circular sampling method)	1time / month	
		Rise top outer diameter				
		Outer diameter surface				
Inner diameter rough-cut	All model	Inner diameter				
		Surface roughness				
Outer diameter rough-cut	All model	Rise width				
		Rise outer diameter				
		Rise top outer diameter				
		Bottom chamfering outer diameter				
		Outer diameter surface				
		Outer diameter surface top length				
		Outer diameter surface bottom length				
Outer diameter grinding	All model	Outer diameter surface				
		Verticality below rise	(Coefficient continuous manufacturing type sampling inspection) AOQL : 1 % $\bar{P}$: 2.5 %	1time / 4hours (Circular sampling method)		
		Circle rate				
		Taper				
		Piece				
Outer diameter grinding	All model	Surface roughness			1time / month	
		External feature				
Inner diameter sand bottom	All model	Inner diameter size				
		Surface roughness			1time / month	
	All model	Water leakage				

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But, all model shall be inspected for surface roughness external feature and outside surface outer diameter size among the inspection methods of responsible manufacturing department.

6. Inspection Lot and Sample Size

It shall be as table 2.

Table 2

Inspection items	Inspection lot		Sample size
	Responsible manufacturing department	Responsible inspection department	
OSize inspection for each process	5 of manufactured amount for each process shall be 1 inspection lot.	4 hour manufactured amount for each process shall be 1 inspection lot.	n = 1
Surface roughness inspection for each process	All model inspection		
External feature inspection for each process			

7. Sampling Method

It shall be as table 3.

Table 3.

Sampling order	Process name	Sampling term and method	
		Responsible manufacturing department	Responsible inspection department
1	Outer diameter rough-cut	Continuously sample group of 5 samples decided by inspection method.	Continuously sample as much as the amount decided by inspection method for every 4 hours.
2	Inner diameter rough-cut		
3	Outer diameter sand bottom		
4	Outer diameter grinding		
5	Inner diameter sand bottom		

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8. Inspection and Testing Method

It shall be as table 4.

Table 4.

Process name	Inspection items	Inspection and testing method	
		Responsible manufacturing department	Responsible inspection department
Outer diameter rough-cut	Rise outer diameter	By using limit gauge, measure the center part to random vertical direction.	
	Rise top diameter		
	Outside surface outer diameter	By using limit gauge, measure the 15mm point from both ends of outside surface top and bottom to random vertical direction.	
Inner diameter rough-cut	Inner diameter	By using cylinder gauge, after measuring the 15mm point from both ends of outside surface top and bottom to random vertical direction, indicate it with mean value according to its position.	
	Surface roughness	Inspect it by eyes using cornparison standard specimen.	- Everyday inspection Inspect it by eyes using comparison standard specimen. - Regular inspection Using a roughness gauge, measure the 15mm point from the top. After stating cylinder block pressure, compare and inspect with horning completed data.
Outer sand bottom	Rise width	Measure random 2 spots with a limit gauge.	Measure left and right, 2 spots with a micrometer.

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